

Green's Fruit Grower.

A MONTHLY JOURNAL.
Devoted to Orchard, Garden, Poultry and
Household.
CHARLES A. GREEN, Editor.

J. CLINTON PEAR, Business Manager.
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The circulation of GREEN'S FRUIT GROWER
is larger than any other horticultural
paper published in America.

EDITORIAL.

Please favor us by notifying us by postal
card in case you are getting more than
one copy of Green's Fruit Grower. This
occurs now and then on account of similarity
of names, etc. Kindly give this your
attention and thus greatly aid us.

Not Compelled to Believe.

There is no law compelling people to be-
lieve. I do not recall any place in the
Bible which attempts to compel belief on
the part of any individual, although there
are many places where we are urged, or
solicited, to do so. There is no law
which can compel the doing of that which
is impossible. I doubt if it is possible to
compel a person to believe anything. Bel-
ief sometimes comes as a result of
early education. Thus if our forefathers
were Republicans or Democrats, we grow
up in the belief that the party to which
our fathers were attached was the best
of all, and if we have been brought up
in the Methodist or Baptist church, we
have grown into the belief that one
of these is the true doctrine. But how
shall we compel a person to believe against
his will?

We are doubtless responsible for our be-
liefs. We are endowed with intelligence,
which has offered us opportunities for
study and investigation, and we are in
duty bound to believe that which is true;
but if we have not made the most of these
opportunities for enlightenment, and do not
believe, no one can compel us to believe.
We have commenced in Green's Fruit
Grower a series of lectures on Biology,
which will probably continue through the
year, and we invite our readers to attend
these lectures. We believe everything that
the lecturer states in this course of lec-
tures. He is a man who has spent al-
most his life in studying this particular
branch of science. His name is Guy Knox,
of the leading scientific men of the age.
It has taken many years to study and in-
vestigate. Many generations of students
have labored to arrive at the conclu-
sions announced in these lectures. The
conclusions of these lectures are the line
of the leading scientific men of the age.
This has largely been a labor of
love on the part of the investigators.

The claim of science is that there were
not special creations of various kinds of
animals. It is possible that this theory
may not be correct. There are wise men
of science who dispute this theory. The
consensus of scientific opinion is, how-
ever, that this theory is correct, or at
least one. Whether it is correct, or cor-
rect one, should not disturb one's belief in
the Bible, or in the Creator, and the ques-
tion is not a serious one for practical people,
such as are the readers of this paper. Many
of our readers will not believe that these
conclusions are correct, and we shall not
attempt to persuade them otherwise. We
are not at all imaginative. It requires im-
agination as well as knowledge to believe
all that science teaches.

We are told by astronomers that a
greater number of the stars, which we see
on a bright night, are suns often many
times larger than our sun, and that each
of these stars, or suns, has a system
of planets revolving around it much larger
than the earth, Venus, Jupiter, Mars,
Neptune and Uranus, which comprise our
planetary system. There are many good
people, and intelligent people, who do not
believe that this is true in regard to the
stars, and yet astronomers can prove that
it is true. Astronomers have instruments
with which they cannot only compute the
distance of the stars, but with which
they can distinguish the constituent parts
of other worlds, defining the material of
which each is constructed. Thus they
find that other worlds, or in other words,
stars and suns, are formed of the same
material as the earth, although the den-
sity may vary considerably. The earth is
an old world. In digging deep wells as
many as ten strata of coal have been dis-
covered, some of these nearly ten thousand
feet below the present surface. Since each
stratum of coal represents a different age,
and also each stratum of rock, we get some
idea of the age of the earth—dozens of
thousands of millions of years.

Other worlds such as we see in the stars
are often newer worlds now in the condi-
tion that our world was in when it was
first of animal or plant life appeared upon
it. Other worlds are actually in the process
of being created now. Astronomers can
look out on any bright evening on such
worlds, which the Creator is forming day
by day, year by year and age by age.

Notwithstanding that these facts can be
proven, and that the theories given in
these lectures on Biology are supposed to
be capable of proof, our readers need not
be disturbed or compelled to believe.
It has been our plan in editing the Fruit
Grower to give our readers material for
thought. It is well to think. Thinking
exercises the brain, stimulates ambition,
and is in every respect ennobling. By
thinking we get a better idea of our Cre-
ator, of nature, of man, and of our destiny.
You can distinguish many other items pub-
lished in Green's Fruit Grower encourage
our readers to think, and to continue in-
vestigating by reading valuable books, one
purpose of the publishing of Green's Fruit
Grower will have been accomplished.

European Excursion.

If any of our friends would like to take
a trip to Europe, they can join Town-
send's Excursion leaving New York July
8th, returning in two or three months,
more or less, at a very moderate expense,
with first-class service in every respect.
Mr. Townsend is principal of one of our
public schools at Rochester, N. Y., and is
the man with whom the Editor of Green's
Fruit Grower made his trip to Europe.
Please address him for circulars. Men-
tion Green's Fruit Grower.

MY OLD NEIGHBORS.

Guy Knox.

No. 7.
On the west side of our farm was a
heavy piece of timber, which over-
shadowed an humble log cabin, located at
the foot of the hill, near a brook, where
an Irishman by the name of Guy Knox,
our woodland being somewhat elevated
out the early morning sun so that
Guy did not receive its rays until 10
o'clock.

There was a beaten path from my old
homestead farm, through the woods,
across the fields, down the valley to the
schoolhouse. This was a path that
school children used to take on their way
to the cobblestone schoolhouse, which was
located a quarter mile beyond.

The brook referred to passed close by
the schoolhouse and the remembrance of
it can never be effaced from my memory.
In the spring the banks of the brook were
overgrown, also the bridges and the road;
in the winter it furnished great sport for
skaters; in summer it was well
stocked with fish of considerable size,
which were enticed with great enthusiasm.
It was also well stocked with crabs, turtles
and huge snakes, which frequently af-
forded exciting contests for our children.
Brook like all brooks, it meandered through
the meadows and valleys in crooked paths.
It wound its way by Guy Knox's little
farm, which did not embrace over an
acre, or two originally, but Guy dug a
very straight path for it, very deep,
and filled up the old channel, beautifying
his place and adding to its productivity.

Guy Knox was an original character in
looks, dress, language and every other par-
ticular. He was not a handsome man.
His face was long and angular, his nose
long and pointed, and his eyes small, dark,
deep set under long shaggy brows. His
hair was black, worn long, and was gen-
erally bushy and unkempt. He wore a
full, dark beard, without a mustache.
Guy and the richest and most melodious
brogue of any Irishman I ever met. It
was a delight to hear him talk. Guy was
a poor man; his wagon, his horse, his plow,
cultivator, his dress, his dwelling, every-
thing proclaimed this fact. His fences
were laboriously patched, and the hinges
of his gates were of leather. He raised
water from his well by a hooked pole,
having no pump.

Often have I gone across the fields and
through the woods to see Guy Knox, or
late evening, to secure the services of Guy
Knox for some job such as butchering,
threshing, sawing wood, ditching, or some
other like work. Sometimes Guy would
return with me to the farm, and remain
until the evening, when he would be very
black pipe, which, whenever I alluded to it,
Guy would say he smoked it to keep his
nose warm. But doubtless the short
stem enabled him to get more nicotine
from the tobacco, the blackness of his
very old pipe gave the tobacco a strong
taste, which was agreeable to him.

Mrs. Knox was a fine specimen of vigor-
ous and beautiful womanhood. She was
nearly six feet tall, of fair complexion,
with blue eyes, and a very fine physi-
cal. She was an athlete. Mrs. Knox also
helped at the house through peculiar jobs
of butchering and other such like work.
Mrs. Knox was almost as charming a
character to us school children as her
husband. Both were exceedingly kind
and generous, regarding our empty stomachs
often with radishes, onions, or other deli-
cacies from their garden, as we would be
coming home from school at night half
starved.

The cabin of Guy Knox sheltered a
large family of children. I do not remem-
ber how many, but at least eight or nine.
All were girls with the exception of two or
three. These children were not only at-
tractive in appearance and manner, but
were among the most intelligent, kind
and among the best scholars in the school.
No one thought of looking down on them for
the reason that they lived in a log house.
Indeed, our country school was in no wise
aristocratic, since a great majority were
people who had a work in order to get
along in the world.

Guy Knox and his wife were very indus-
trious people. They were always hard at
work, and their work was productive of
good results. Their farm, or two, was
naturally about as poor land as could be
found, but by ditching and filling in it
was made most productive. Gradually the
fences and buildings were improved. Later
a new white house was erected on the
site of the old log house, also a comfortable
barn. There more land was added to the
little place until it comprised a farm of
considerable size. But I remember more
particularly the log house, in which I
was brought up, and the people who lived
there, who were not infrequently in my
memory, while conversations held in
this place with Guy Knox's children are
not easily obliterated.

Guy was an honest man. None of the
surrounding farmers ever lost any chil-
dren or sheep, as they often do from poor
families living in their vicinity. He was
not a man to get entangled in debt. I
do not remember that he was a church-
going man, but yet everything about his
place was orderly and quiet on the Sab-
bath day. His children attended the Sun-
day school, and availed themselves of all
such opportunities offered.

A few years ago while visiting the local-
ity of my childhood, I learned that Guy
Knox was dead. I attended the funeral.
In order to indicate the esteem in which
he was held in the community, although a
poor man, I will say that the funeral
was largely attended by the prosperous
people in that locality. The house was
far too small to contain those who came
to pay their last respects to this kind-
hearted man. His wife died recently.

The children I have lost sight of, with
the exception of the eldest son, William,
who is a prosperous farmer, owning a
large and fertile farm not far from Roch-
ester. He passed his present home often
on his way to and from market. The
children take after their mother, being
generally fair and of fine physique.

What Kind of Fertilizer is Best?

Please answer a few questions in your
next issue. What is the best fertilizer for
a young apple orchard, and how would you
apply it; the best kind for a peach orchard.
What kind of fertilizer is best for grape
vines?
Reply: This query illustrates the fact
that many people have an idea that dif-
ferent kinds of fertilizers are required for
different kinds of crops. This is in one
sense a mistake. There are three elements
fertility for all crops, whether grain or
fruit, and these are potash, phosphoric
acid and nitrogen. Whatever grows on
the face of the earth can be fertilized with
these three ingredients. Barnyard manure
and ordinary phosphate, such as is used
for application to wheat, contain all these
ingredients. There is much quackery in-
dulged in by makers of fertilizers, who
label one brand apple fertilizer, another
plum fertilizer, another peach, strawberry,
blackberry, raspberry fertilizer, etc.
It is true that fruit trees need more
potash than most grain crops, but aside

from this a well proportioned fertilizer
comprised of these three elements—phos-
phoric acid, potash and nitrogen, will be a
good fertilizer for any kind of fruit tree
or plant.

It must be borne in mind, however, that
different kinds of soil require different
kinds of fertilizers; sandy soils are notably
deficient in potash. If our readers will
purchase a high grade phosphate, such as
they use upon their wheat fields, they will
find it a good and safe fertilizer for all
kinds of trees, plants and vines.—Editor.

Disappointment.

Most people are doomed to disappoint-
ment. We all have our trials, our suc-
cesses, our joys, but few can say they have
never met with disappointment. People
are disappointed in love. There are few
who marry their first choice. Few people
are permitted to follow the business or pro-
fession which lies nearest the heart. There
are poets and artists who, finding their
work unremunerative, have been compelled
to take shirts, dig ditches, or do other un-
congenial work. Some people have a
longing for travel. They imagine that the
acme of happiness can be secured go-
ing from place to place, and country to
country, viewing great cities, great moun-
tains, great lakes and oceans of the earth;
but their means will not allow them to in-
dulge their tastes, therefore they are
filled with disappointment.

How many lawyers start out in life aim-
ing at the highest of achievement, who,
owing to ill health, or incapacity, have
been unknown out of their own small
circle of acquaintances. I have known physicians who
were scholars, men, well versed in the
art of healing, who, owing to their want
of lack of tact in management of pa-
tients, or through disagreeable personal
habits.

Perhaps the greatest disappointment of
all is that of an accomplished man who
has spent much time and money in ac-
quiring an education, who finds out at last
that he is not able to make a respectable living
for himself and family. This is particu-
larly humiliating owing to the fact that
his failure teaches him that he is not
wanted on this earth; that his crea-
tion has found any way of making himself
sufficiently useful to his fellows to warrant
him in securing his services, or purchas-
ing his goods, or using his talents in any
way whatsoever. These are the people
who must put out in touch with hu-
manity, we must be useful to hu-
manity, we must be so helpful as to in-
duce people from far and near to seek
our services, or to seek our goods, which
are of more value than more than ordi-
narily reliable and helpful.

There have been many disappointments
along the line of inventions that in al-
most any department of human en-
deavor. There are many men who can in-
vent ingenious devices, who are endowed
with large inventive faculties, but are
often lacking in business shrewdness and
forethought. Therefore many inventors
having good inventions are unable to suc-
cessfully introduce them, or to make any mon-
etary gain from the sale of their inven-
tions. It has been said that it is
easier to invent than to make money out
of an invention. There are men who
from youth to old age have been occupied
on an invention, who eventually have suc-
ceeded in their grasp, but which they
have never been able to perfect. Imagine
the disappointment of such a person at the
age of eighty, with failing strength
and energies, struggling into the grave
in poverty, while the greatest of inven-
tions, almost within sight, yet eluding him,
like the mirage of the desert, or of the
pot of gold which is said to be buried
at the base of the rainbow.

We Don't Want Any More.

Oysters are a delicacy. I refer to good
oysters. We voted at our house that we
would have them sent up regularly and
we enjoyed them for a season, but at last
we grew weary of them, and we all voted
we wanted no more oysters, and which they
were purchased for a long time.
I am particularly fond of whitefish.
I have seen them taken out of our Lake
Ontario shore by the wagon load. These
fish are good eating, and are very re-
spectable. We ordered the fisherman to bring
us nice fish every week, but after a time
we became tired. Not that the fish was
not desirable food, but these particular fish
had been kept too long and had lost their
flavor. We all voted to have no more
whitefish was sent.

Fresh hot toast is healthful and ap-
petizing. It is sometimes difficult to get it
hot on the table. Some people think that
any old bread will make good toast, but
this is a mistake. We all voted to have
toast regularly, but after a time the cook
allowed it to dry over the stove until the
crust was hardly bitable. It also came
on the table partially cold. Then we de-
cided we didn't want any more toast.

March 30th I went into a lunch room
and asked if their strawberries were good;
the price was 15c. per small dish for South-
ern strawberries. The reply was that the
strawberries were fine. I therefore ordered
a dish of my coffee and bread and but-
ter, and the strawberries. I was very satis-
fied. I tried to cut out one of these straw-
berries in two, but met with difficulty, the
berry was so hard and green. They were of
good size but had been picked before
matured. A few had been the natural straw-
berry flavor, but the majority were of a
better quality than small turnips. I ate
a portion of the berries, but feared that
I might have the colic a short time after.
I shall not order any more strawberries
until our home-grown fruit comes into mar-
ket.

I speak of these matters not to call at-
tention to my personal affairs but to in-
dicate that which occurs when poor fruit
is put upon the market. If we pick our early
grapes before they are ripe, the man who
puts a basket will not buy any more fruit
so long as he remembers how those green
grapes tasted. If he buys a bushel of ap-
ples and they are some hard, sour variety,
he will not buy more apples as long as he
can remember how those rotted in his cel-
lar since nobody would eat them. Good
ripe fruit when sold makes a market for
more of the same class. Poor fruit glut
the market, and dissatisfies the people with
fruit eating.

Our Prize Advertisement.

We have offered a prize of \$10.00 for
the best advertisement of anything ad-
vertised in Green's Fruit Grower, and the
prize has been awarded to T. E. Dean,
Indianapolis, Ind. We have had some dif-
ficulty in deciding which was entitled to
this prize. We received many valuable
and ingenious ideas from our friends and
subscribers in regard to advertising. We
will in future numbers publish some of
the best of the advertisements sent. We
offer thanks to our friends for the inter-
est they have taken in this matter and
regret that we cannot give each of them
a prize.

It is believed by some naturalists that
wasps, like bees, establish sentinels at
the door of the nest to prevent the en-
trance of intruders.

BIOLOGY, OR THE SCIENCE

OF LIFE.

Protozoans and Sponges.

Professor Dodge of the University gave
the third of his lectures on biology at the
Beverly lecture yesterday afternoon be-
fore a large and interested audience. The
lecture was a continuation of last week's
which had been left partly unfinished by
the shortness of the time and the abun-
dance of the material at hand for de-
scription and explanation. The course
has now reached to sponges, the more ad-
vanced form of cellular life and will be
continued next week, when the hydra,
a species of fresh water animals of a min-
ute size which attach themselves to small
stones and stones will be discussed. The
lecturer was aided by stereoscopic views
of highly magnified specimens of the animals
and forms of life under discussion.

The professor first described that form
of lowest life known as the vorticella and
its methods of regeneration. A plate was
projected upon the canvas from a stereop-
ticon, showing a highly magnified collec-
tion of the animals in question, which
looked greatly like polyp corals. The first
figure showed one of the animals feeding
at the end of a long stem attachment like
a leaf, with thready tentacles waving star-
wise in the water. The next figure
showed the animal after it had been fed,
the bud-like head bent down like a
wilting flower. The animal has two methods
of reproduction, the first by division of
the body into two equal parts; the second
by the union of two different individuals. In
the first method a small crevice almost
at the center of the front end of the body
appears which in the period of life has
so much increased that it nearly di-
vides the animal. The next was complet-
ely divided, and one of the parts prepared
to swim away. This process of reproduc-
tion, the professor said, for 100 or
150 generations. After that, that the race
may not die out, the process of conjuga-
tion is accomplished by means of the con-
junction of two bodies of apparently dif-
ferent sexes. The smaller or "male" body
is called the male, and the larger, the
megazoid, meaning little and big animals.
The megazoids originate from the divi-
sion of the megazoid into eight parts.
Each part is provided with swimming
organs, and when mature it detaches it-
self from the cluster and swims about un-
til it finds a megazoid of its own species
in the proper condition to be fertilized. It
attaches itself to the latter and the bodies
fuse together, the smaller being entirely
absorbed by the larger. The megazoid
then divides a great many times in suc-
cession, thus producing new individuals.
How these small zooids know how to find
the larger and to select their own kind
from among the various other kinds living
about the cluster is a mystery. It is prob-
ably the facts show that there must be some
kind of psychic activity existing in the
lowly creatures.

The professor then described the method
in which an amoeba may be cut in two
by a delicate knife so that the two parts
might have a nucleus, and the other part.
The result is that the food taken by the
portion containing the nucleus is perfectly
digested, while that of the nucleus died
soon after, and the whole organism is
malnourished.

The next subject was the stentor, or
trumpet animalcule, a form of life just
large enough to be seen with the naked
eye and shaped like a trumpet, for which
reason it gets its name. The size of the
animal makes it possible to observe an ex-
periment upon its condition. The stentor
has a very long nucleus shaped like a
string of pearls which extends lengthwise
through the body. Vivisection of these
animals shows that no reproduction in what
manner they are cut, so long as a portion
of the nucleus, each will live and de-
velop new anterior and posterior por-
tions, as the head and the tail of the
animal are killed, so that by human means
these animals may be reproduced in im-
mense numbers. The experiment
shows that of those severed parts contain-
ing a fragment of the nucleus are able to
regenerate the entire body. "If we turn
back to the method of reproduction of the
vorticella," said the lecturer, "we will see
that these animals are really immortal,
since each original cell lives in the bodies
of its descendants, so that, unless by some
accidental means, the death of these or-
ganisms is not a natural occurrence. They
are captured by the crab. The crab is
hidden under the sponge growth and thus
enabled to approach its prey without
alarmed it, hence both sponge and crab
benefited by the mutual arrangement.
We know this by the fact that the sponges
are well known.

The remainder of the lecture was taken
up by a series of slides representing the
various forms of sponges, from the com-
mon bath sponge, which is a bony skeleton,
so common as a toilet necessity, to the
beautiful flinty skeletons from the Japa-
nese coast. Another peculiarity of the
sponge is that of fastening itself on a
solid, for instance, and feeding upon the
minute debris slaughtered fish which
are captured by the crab. The crab is
hidden under the sponge growth and thus
enabled to approach its prey without
alarmed it, hence both sponge and crab
benefited by the mutual arrangement.
We know this by the fact that the sponges
are well known.

At the close of his lecture Professor
Dodge announced that Professor Ward of
the Ward Natural Science establishment,
which described, at the meeting of the
Academy of Science, in the chapel of An-
derson hall at the university next Tues-
day night, the great coral formations of
the Pacific ocean in the neighborhood of
Australia, whence Professor Ward has
just returned.—Post Express.

From the Pomological Division.

Mr. Charles A. Green, Rochester, N. Y.:
Dear Sir: Replying to your favor of
March 24th, I would respectfully say that
I will take great pleasure in answering
questions that refer to the legitimate work
of this division. We shall be pleased to re-
ceive such as you may kindly send us.
It is to be regretted that correspondents
are unfamiliar with the proper procedure
each Division of the Department of Agri-
culture. The three letters inclosed are
of above date all belong to other divi-
sions of this department and have there-
fore been referred to them. The postal
from O. B. Rea, of Bear Dam, In-
diana, relating to the strawberry worm
that destroys the pollen properly belongs
to the Division of Entomology. The one
from George Brest, Elizabethville,
Penn., relating to the black
and undeveloped side of the peach with
tough and bitter flesh, together with an
account of the rotting of the peach with
plums before maturity, belongs to the
Division of Vegetable Physiology and
Pathology and has been referred to the
same. The report of the same letter de-
scribing the effects of the borers upon
his peach trees has been referred to the
Entomologist. I have sent Mr. Wilborn
"Notes on Peach Culture" by J. H. Hale.
It would be well if your many thousands
readers were informed that all questions
relating to insect depredations should be
referred to the Entomologist and that all
diseases of a fungous origin should be
referred to the Division of Vegetable
Physiology and Pathology. With the de-
sire to assist you in the dissemination of
knowledge that may be useful to the gen-
eral fruit grower, I am very truly yours,
S. B. Heiges, U. S. Pomologist.

A setting hen is like a candidate, anx-
ious for the returns to come in.

But on other occasions certain forms of
protozoa get the better of the blood and
disturbances follow, as in the case of
malaria, in which disease many of the red
corpuscles of the blood are found to con-
tain ameboid organisms. Physicians are
beginning to believe, said the lecturer, that
many of the tumors and cancers are
caused by parasitic protozoans called cau-
tiously "cellular inclusions," which eat in-
to the healthy tissues of the body and
cause local decay.

"Colonial formations" were next de-
scribed. They are a lot of these protozoan
organisms all fastened to a common stem,
living in unity and political happiness.
These colonies originate from a single or-
ganism which divides into parts. These
instead of separating, remain connected.
Some of the parts procure food for the
colony while others produce new individ-
uals. Thus arises a "physiological division
of labor" among the colonists.

The professor then said that the origin
of the multicellular animal was to be
found in these colonial formations. These
unicellular animals are united by little
strings of protoplasm just like many of the
cells of the higher animals.

The professor then said that the origin
of the multicellular animals are the first
order of multicellular animals and are
composed of two sorts of cells, each of
which resembles a particular kind of pro-
tozoan. These two forms of cells form very
ill-defined tissues in the body of the sponge.
The sponges are the lowest animals to re-
produce by means of sperm cells and eggs.
Both sperm cells and eggs arise from the
ameboid cells, the former by the repeated
division of such a cell, the latter by its
growth to a much larger size. A sperm
cell is provided with a sort of tail which
propels it through the water, until it gets
into an egg-cell which has in its turn
grown until it has reached the stage of
fertilization.

The interior of one of the globular por-
tions of the sponge is lined with an im-
mense number of cells, so that it looks
when magnified, not unlike a hollow globe
lined with closely placed minute incandes-
cent light bulbs. At the end of these cells
are little cilia, or hair-shaped organs,
which wave in the water, and attract the
small particles of suspended food which
furnish the sponge nutriment. These cilia
keep a current of water constantly flowing
through the channels in the sponge body
thus bringing in the nutriment.

Except as museum specimens, a person
rarely sees the entire sponge, for toilet
sponges are merely the fibrous skeleton
of the animal, the cells forming its flesh
having been removed. Some sponges,
when taken out with the water alive, feel
exactly like a piece of fresh liver.

The professor said that the skeletons of
the sponges, which are what are generally
called the sponge colloquially, are formed
of a small, elastic, horny substance, or of
glass, or of silica, or of other mineral
substances. The former class is called
fibro-spongiae, from the fibrous,
tough, elastic nature of the skeleton; the
latter, calcispongiae, from the mineral na-
ture of the skeleton. Other sponges make
skeletons of flint in the form of threads
resembling spun glass. The culture and
capture of toilet sponges form one of the
great industries of the sea coasts where
it grows. It is secured by means of rakes,
brought up to the surface and laid in the
sun to dry and decay. The stems of the
decaying animal part of the sponge is
frightful. When the bodies have com-
pletely rotted, the sponges are cleaned
and packed in bales so closely com-
pressed that one bale would fill half a
good sized room were the sponges en-
larged by water.

The other sponges, those having the
mineral skeletons, are useless for toilet
use, since they are as brittle as spun
glass. Indeed, when the beautiful glass
sponges of the Japanese coast were first
brought to Europe the scientists there
were skeptical enough to believe that the
objects were manufactured by the coun-
try, whose manual dexterity in imitation
was well known.

The remainder of the lecture was taken
up by a series of slides representing the
various forms of sponges, from the com-
mon bath sponge, which is a bony skeleton,
so common as a toilet necessity, to the
beautiful flinty skeletons from the Japa-
nese coast. Another peculiarity of the
sponge is that of fastening itself on a
solid, for instance, and feeding upon the
minute debris slaughtered fish which
are captured by the crab. The crab is
hidden under the sponge growth and thus
enabled to approach its prey without
alarmed it, hence both sponge and crab
benefited by the mutual arrangement.
We know this by the fact that the sponges
are well known.

From the Pomological Division.

Mr. Charles A. Green, Rochester, N. Y.:
Dear Sir: Replying to your favor of
March 24th, I would respectfully say that
I will take great pleasure in answering
questions that refer to the legitimate work
of this division. We shall be pleased to re-
ceive such as you may kindly send us.
It is to be regretted that correspondents
are unfamiliar with the proper procedure
each Division of the Department of Agri-
culture. The three letters inclosed are
of above date all belong to other divi-
sions of this department and have there-
fore been referred to them. The postal
from O. B. Rea, of Bear Dam, In-
diana, relating to the strawberry worm
that destroys the pollen properly belongs
to the Division of Entomology. The one
from George Brest, Elizabethville,
Penn., relating to the black
and undeveloped side of the peach with
tough and bitter flesh, together with an
account of the rotting of the peach with
plums before maturity, belongs to the
Division of Vegetable Physiology and
Pathology and has been referred to the
same. The report of the same letter de-
scribing the effects of the borers upon
his peach trees has been referred to the
Entomologist. I have sent Mr. Wilborn
"Notes on Peach Culture" by J. H. Hale.
It would be well if your many thousands
readers were informed that all questions
relating to insect depredations should be
referred to the Entomologist and that all
diseases of a fungous origin should be
referred to the Division of Vegetable
Physiology and Pathology. With the de-
sire to assist you in the dissemination of
knowledge that may be useful to the gen-
eral fruit grower, I am very truly yours,
S. B. Heiges, U. S. Pomologist.

A setting hen is like a candidate, anx-
ious for the returns to come in.

About the Fire.

People are writing us to inquire whether
the fire which has occurred at Green's
nursery farm will interfere with our pack-
ing and filling orders this Spring. In re-
ply we will say that it will not interfere in
the least.

On March 1st, at about noon, a fire was
discovered in the cellar on our packing
house at our nursery farm, twelve miles
out of Rochester. In a short time the en-
tire structure was destroyed, with all the
trees stored in that particular cellar. But
since this was only one of five cellars in
which we had trees stored, since only a
portion of our stock was in any cellar, and
since a new building far superior to the
old one is now completed, no inconveni-
ence whatever will be experienced in fill-
ing our orders with usual promptness. In-
deed, since the new building will be so
 commodious, and so well equipped with
every modern convenience, so far superior



PREMIUMS

TO GO WITH

GREEN'S



This little picture will come home with telling force to many a tired and overworked farmer, who has often felt that he could no longer stand the strain and who finally succumbed to disease. Poor woman! Do you not know that there is within your easy reach a remedy that will quickly restore you to health and happiness? A remedy that will positively cure

FEMALE COMPLAINTS
BRIGHT'S DISINTEGRATING
URINARY TROUBLES
GENERAL DEBILITY
AND MALARIA

and all diseases caused by disordered kidneys and liver, in medium and large doses, at about your own price. For full particulars, send for our free literature. It is the only medicine that will positively cure.

Large bottle new style
smaller one at your nearest store.

Poor Richard, 1897
DON'T Pay too much for your whistle. & If you want



good fruit trees or plants get them of
C. GREEN, of ROCHESTER, NEW YORK.

Standard pear trees; Bartlett, Anjou, Clapp's Favorite, Flemish Beauty and Howell, in medium and large sizes, at about your own price. For full particulars, send for our free literature. It is the only medicine that will positively cure.

ASTHMA CURE FREE.
If you suffer from any form of Asthma we will send you Free by mail, a copy of a Large Catalogue of Asthma Cures, made from the Asthma Plant. It is the only Constitutional Cure for Asthma. We send it Free for introduction, and to prove that it will cure you. Address THE ASTHMA CURE CO., 114 Broadway, New York.

Rife Hydraulic Engine
Water supplied automatically for root-irrigation, stock farm, or domestic use. Water elevated 30 feet for each foot of lift. A full 2 or 3 more feet. Pure water delivered, using impulse as power.

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With ROOT'S HOME REPAIRING OUTFITS. Send for free catalog describing them and "Root's" "Mystery Process" of home repairing. Harness, Saddlery, Blacksmithing, and all other work. Send to-day. THE ROOT BROS. CO., Plymouth, O.

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Green Apples.

Written for Green's Fruit Grower by
C. A. BERTHAM.

Yes, hail the green apple, for 'tis long to wait the season of ripening, tho' it may not be late; Yet the juvenile longing can scarce be resisted.

Nature's loud call for fruit, to try were in vain, Impelling to strategy, concealment and fraud, To possess it, counting honor and truth but a god.

And when from them to choose is presented, They choose the green apple, how'er late-ripened, What climbing and reaching, were their wish a fairy's wand.

They'd have long arms and legs till their pockets were crammed, Then away to their haunts you might trace them all o'er.

By the green apple pome, and white seeded core, Or when to their sorrow has gone forth the decree: "So early a fruit must be picked from the trees."

And if from looked the stems, 'twas sure to bring you, For an apple self-dropped would be colored, you know.

A disconsolate group, a grave council held, For no breeze had passed by and no apples were left, But just out of reach they stared temptingly down.

Till present and mandate, their voice was quite drowned, Eddies in the air, he used not a chair, But breast on the soft grass, brown feet in the air.

"I'll dare," said resolute, six-year-old Nan, As she tossed back her elf locks "scaped from their band."

"I'm going," said she, "to get some apples right now, And she swung to her shoulder the stem of a broom."

Then smiling along, to seem like a man, Gave a hock and a spit or two, then hunting began, And down came the apple when Nannie said "Bang."

If I present something new, then perhaps I have won, For I think the green apple was never before sung ad libitum.

Reminiscences of Wheatland Forty Years Ago.

(Written for Green's Fruit Grower.)

Mr. Green's sketches of his old neighbors have followed by me with the greatest interest and I turn to them first when the paper comes, for I was born in old Wheatland, at no great distance from Clifton, and though my parents removed from there in 1853, before I was twelve years old, I have never ceased to take a warm interest in all that pertains to that beautiful and fertile region of country.

And I always read the Fruit Grower with a half hope that I may meet with some old familiar names. I venture to hope that Mr. Green will tell us something also of the farms and the people in the immediate neighborhood of Clifton.

I am sure that every one who has read of those fine, thrifty trees, shrubs and vines of his will like to know something about the place where they have been so successfully grown. Certainly one could make a better guess as to his own chances if he knew the local peculiarities of soil, climate, and either he could supply himself with his stock. I think the soil must have been somewhat rocky for I remember that many of the fields were enclosed by stone walls which seemed to me, then very high and solid, and I have a memory of playing in a place where there was a number of large stones heaped one upon another, and down by the brook, on the roadside, there was a rocky hollow which we children were told had once been a lime-kiln.

We picked berries, I remember, in an open exhausted plaster bed, a place full of pits and holes, where the earth had caved in and grassed over in most of them, and grown up to a perfect tangle of blackberry, raspberry, sumach and wild rose bushes. The workmen were then digging, not far away, on the farm of Ira Harmon, and he had a mill also where the plaster was ground.

One always looks back to the days of childhood through a mist that makes all we knew in that happy time seem fair and lovely, but I cannot help thinking, even now, that Wheatland must really have been as beautiful a place as could well be imagined, with its sunny hills, its green meadows, fruitful orchards and yellow wheat fields, and above all its clear, bright streams that ran here and there and everywhere, dimpling and gurgling over their pebbly bottoms, while the marvellous productivity was the soil that in those old times to own a farm in Wheatland was almost better than to be a king.

Many a time I have wondered if the soil of those old farms was at last exhausted by the heavy crops of wheat taken from them or if the owners wisely took measures to keep up fertility by diversified farming. If the Browns, the Blackmores, the Sages, the Hibbards and the Harmons still own farms there, and if, now that wheat raising is no longer profitable, with its sunny hills, its green meadows, fruitful orchards and yellow wheat fields, and above all its clear, bright streams that ran here and there and everywhere, dimpling and gurgling over their pebbly bottoms, while the marvellous productivity was the soil that in those old times to own a farm in Wheatland was almost better than to be a king.

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Notes From The Rural Grounds -New Raspberries.

It seems to be about the right time to place before our readers anything of importance we may have learned about new kinds of raspberries during the past season. Among reds, the Outburst, introduced about fifteen years ago, has generally held the first place as a hardy late variety. Trials of the past season lead us to hope that a more valuable kind will be found in the

LOUDON.—Plants were sent to us in early May of 1892, by F. W. Loudon, of Jacksonville, Wis. and set out here in a rather poor, sandy loam May 10. Mr. Loudon wrote: "I have fruited it for six years. It is a seedling of Turner crossed with Outburst. The berry is large, colored beautiful. It yields 200 bushels to the acre, and may be shipped to New Orleans in good shape."

Our first notes were taken July 10: "The Loudon, as judged by this first season of fruiting—is the best hardy late berry we have tried. The plants did not suffer at all by the past winter—one of the severest known. The berry ripens about with Outburst. It has advantages over Outburst. The berries average larger, the drupes larger. They cling to the stem and do not crumble when picked. The shape is broadly conical, the color nearly that of Outburst, perhaps a little brighter. The berries are very firm, which may not so well be said of those of Outburst. It is among the heaviest yielders we have tried."

July 14.—Loudon is the finest hardy red we know of. Some of the berries are nearly round, some are decidedly conical, more so than those of Outburst. When ready to pick, the color is a bright red, the berry firm. When dead ripe the color is a darker red, but not at all purple.

August 1.—Now that Outbursts are gone, Loudon is still bearing. We have made it that the canes are vigorous and virtually thornless, the foliage luxuriant and healthy. It is not safe to pass any emphatic judgment upon a new raspberry from the way it conducts itself during the first fruiting season, and the Loudon may be said of almost any fruit. As judged by this first season, the Loudon is a hardier variety than Outburst. It is more prolific. The berries average larger, and they are decidedly firmer. They hold to the peduncle better. The color is a trifle brighter and the quality fully as good. Neither the plants nor berries resemble the Turner (its alleged male parent) in any way.

Grapes.

The best time to trim grapevines is in the winter when the ground is frozen dry and without the readily flowing sap. Grapevines may now be cut without injury and without any danger of bleeding in the spring. If done now it can be done deliberately and well. There is always danger of springing the wood, and it is not safe to prune pretty closely, leaving not more than two or three buds on last year's growth. Close pruning always produces more and better fruit.

Grapes are immense feeders and should be supplied plentifully with well rotted manure.

No work yields better results than the proper care of your grape vine, even if you have only a few.

We add some notes for grape culture taken from the Experiment Station record, United States Department of Agriculture, which has just come to hand.

The main points in grape culture are summarized as follows:

With few exceptions grapes of the Lohr species, of which Concord may be taken as the type, are the most satisfactory for general planting.

A warm, rich, well-drained soil is best for the grape.

Almost all vines should be planted at least eight feet apart.

Strong one-year-old vines are most desirable for planting.

Thorough shallow cultivation is essential.

The pruning of the first two years must be done with reference to the system under which the vine is to be trained after it begins fruiting. During this time the shape should become thoroughly established.

The best time for the principal pruning is soon after the leaves drop in autumn, but pruning can be done at any time during the winter when the vines are not growing. Summer pruning consists in pinching lateral branches in order to encourage the development of the fruit and the bearing wood for the succeeding year.

The long arm, short spur system of training is usually the most satisfactory for the inexperienced grower, but the renewal systems are highly recommended.

The most satisfactory way to bring a neglected vine into vigorous growth is to cut the vine off at the ground, and train the new growth as it springs from the stub in one of the renewal systems.

The principal diseases of the grape are powdery mildew and black rot, both of which can be controlled by spraying with a Baking Mixture.

Bagging the grapes as soon as the bloom has fallen will prevent rot, and the fruit is more beautiful when grown in bags.—Ex.

How to Use the Apple Crop.

Apple growers in Wayne county, N. Y., have hit upon a method whereby their entire apple crop is utilized, says Central Station Fruit Grower. Wayne county is one of the largest apple growing sections in the country, but growers did not begin to utilize the entire crop until low prices and insect ravages, causing a large per cent. of inferior fruit, caused them to do so. All fruit is carefully graded and used for cider, evaporator, canning and cold storage purposes. Ordinary cider ferments rapidly, so it is filtered through a sand lacking in iron that is obtained in Massachusetts, and comes out as a sparkling champagne that will keep a year without fermentation. This cider-champagne is largely exported and commands a high price. The next grade of apples are evaporated, and of these enormous quantities are used, which bring to Wayne county apple growers over \$1,000,000 annually. In evaporators there are many makes on the market. A good machine, capable of evaporating fifty bushels per day, can be bought for \$75 to \$125, and the old man's place and fifty bushels daily evaporator for \$300. Cost of evaporator with average one and one-half cents per pound, and from five to six pounds of evaporated fruit can be had from one bushel of fall fruit, and six and one-half to seven and one-half pounds from winter fruit. The big surplus this fall makes prices unusually low. A finer grade of apples than those used for evaporating, but not perfect fruit, is used for canning. For evaporation, apples are cored, peeled, sliced by machine, but for canning they are cored, peeled and cut in halves or quarters. To fill a dozen cans one and one-half bushels of fruit are required, which can be bought for twenty-five cents. This fall many apples are being canned in

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It seems to be about the right time to place before our readers anything of importance we may have learned about new kinds of raspberries during the past season. Among reds, the Outburst, introduced about fifteen years ago, has generally held the first place as a hardy late variety. Trials of the past season lead us to hope that a more valuable kind will be found in the

LOUDON.—Plants were sent to us in early May of 1892, by F. W. Loudon, of Jacksonville, Wis. and set out here in a rather poor, sandy loam May 10. Mr. Loudon wrote: "I have fruited it for six years. It is a seedling of Turner crossed with Outburst. The berry is large, colored beautiful. It yields 200 bushels to the acre, and may be shipped to New Orleans in good shape."

Our first notes were taken July 10: "The Loudon, as judged by this first season of fruiting—is the best hardy late berry we have tried. The plants did not suffer at all by the past winter—one of the severest known. The berry ripens about with Outburst. It has advantages over Outburst. The berries average larger, the drupes larger. They cling to the stem and do not crumble when picked. The shape is broadly conical, the color nearly that of Outburst, perhaps a little brighter. The berries are very firm, which may not so well be said of those of Outburst. It is among the heaviest yielders we have tried."

July 14.—Loudon is the finest hardy red we know of. Some of the berries are nearly round, some are decidedly conical, more so than those of Outburst. When ready to pick, the color is a bright red, the berry firm. When dead ripe the color is a darker red, but not at all purple.

August 1.—Now that Outbursts are gone, Loudon is still bearing. We have made it that the canes are vigorous and virtually thornless, the foliage luxuriant and healthy. It is not safe to pass any emphatic judgment upon a new raspberry from the way it conducts itself during the first fruiting season, and the Loudon may be said of almost any fruit. As judged by this first season, the Loudon is a hardier variety than Outburst. It is more prolific. The berries average larger, and they are decidedly firmer. They hold to the peduncle better. The color is a trifle brighter and the quality fully as good. Neither the plants nor berries resemble the Turner (its alleged male parent) in any way.

Grapes.

The best time to trim grapevines is in the winter when the ground is frozen dry and without the readily flowing sap. Grapevines may now be cut without injury and without any danger of bleeding in the spring. If done now it can be done deliberately and well. There is always danger of springing the wood, and it is not safe to prune pretty closely, leaving not more than two or three buds on last year's growth. Close pruning always produces more and better fruit.

Grapes are immense feeders and should be supplied plentifully with well rotted manure.

No work yields better results than the proper care of your grape vine, even if you have only a few.

We add some notes for grape culture taken from the Experiment Station record, United States Department of Agriculture, which has just come to hand.

The main points in grape culture are summarized as follows:

With few exceptions grapes of the Lohr species, of which Concord may be taken as the type, are the most satisfactory for general planting.

A warm, rich, well-drained soil is best for the grape.

Almost all vines should be planted at least eight feet apart.

Strong one-year-old vines are most desirable for planting.

Thorough shallow cultivation is essential.

The pruning of the first two years must be done with reference to the system under which the vine is to be trained after it begins fruiting. During this time the shape should become thoroughly established.

The best time for the principal pruning is soon after the leaves drop in autumn, but pruning can be done at any time during the winter when the vines are not growing. Summer pruning consists in pinching lateral branches in order to encourage the development of the fruit and the bearing wood for the succeeding year.

The long arm, short spur system of training is usually the most satisfactory for the inexperienced grower, but the renewal systems are highly recommended.

The most satisfactory way to bring a neglected vine into vigorous growth is to cut the vine off at the ground, and train the new growth as it springs from the stub in one of the renewal systems.

The principal diseases of the grape are powdery mildew and black rot, both of which can be controlled by spraying with a Baking Mixture.

Bagging the grapes as soon as the bloom has fallen will prevent rot, and the fruit is more beautiful when grown in bags.—Ex.

How to Use the Apple Crop.

Apple growers in Wayne county, N. Y., have hit upon a method whereby their entire apple crop is utilized, says Central Station Fruit Grower. Wayne county is one of the largest apple growing sections in the country, but growers did not begin to utilize the entire crop until low prices and insect ravages, causing a large per cent. of inferior fruit, caused them to do so. All fruit is carefully graded and used for cider, evaporator, canning and cold storage purposes. Ordinary cider ferments rapidly, so it is filtered through a sand lacking in iron that is obtained in Massachusetts, and comes out as a sparkling champagne that will keep a year without fermentation. This cider-champagne is largely exported and commands a high price. The next grade of apples are evaporated, and of these enormous quantities are used, which bring to Wayne county apple growers over \$1,000,000 annually. In evaporators there are many makes on the market. A good machine, capable of evaporating fifty bushels per day, can be bought for \$75 to \$125, and the old man's place and fifty bushels daily evaporator for \$300. Cost of evaporator with average one and one-half cents per pound, and from five to six pounds of evaporated fruit can be had from one bushel of fall fruit, and six and one-half to seven and one-half pounds from winter fruit. The big surplus this fall makes prices unusually low. A finer grade of apples than those used for evaporating, but not perfect fruit, is used for canning. For evaporation, apples are cored, peeled, sliced by machine, but for canning they are cored, peeled and cut in halves or quarters. To fill a dozen cans one and one-half bushels of fruit are required, which can be bought for twenty-five cents. This fall many apples are being canned in

prices of a short crop next year and good prices for canned fruit fifteen or eighteen months hence. In the process of evaporation and canning, skins and cores are bleached and used for jelly purposes, being seasoned and sold as jelly of almost every variety of fruit on the market. Among the poor of Europe, apple jelly displaces the use of butter. For packing in cold storage, only the very best, perfect and sound apples are selected. Immense quantities of such fruit are now going into cold storage in the belief that the market will be better from March to June. The apple crop has got to be marketed in the most attractive appearance, or the orange will seriously compete with it as a winter fruit. Co-operative cold storage should be constructed and operated on the same business line as are the co-operative creameries and cheese factories, and if fruit growers would thus combine in the marketing of their fruit, English buyers could as easily be attracted to American cold storage houses, as they are to Ulica or Little Falls cheese markets. Such houses should be of 10,000 to 20,000 barrel capacity. A building 40 x 100 feet will store 4,000 barrels of apples and will cost from \$1,000 to \$1,500, depending on the section where built. For

